CH 662931 A5

(19) CONFÉDÉRATION SUISSE
OFFICE FÉDÉRAL DE LA PROPRIÉTÉ INTELLECTUELLE

(11) CH 662931 A5

(51) Int. Cl.⁴: A 47 G 19/22
F 21 L 11/00

Brevet d'invention délivré pour la Suisse et le Liechtenstein
Traité sur les brevets, du 22 décembre 1978, entre la Suisse et le Liechtenstein

(12) FASCICULE DU BREVET A5

(21) Numéro de la demande: 303/85

(22) Date de dépôt: 24.01.1985

(24) Brevet délivré le: 13.11.1987

(45) Fascicule du brevet publié le: 13.11.1987

(73) Titulaire(s):
H. N. S.A., Fribourg

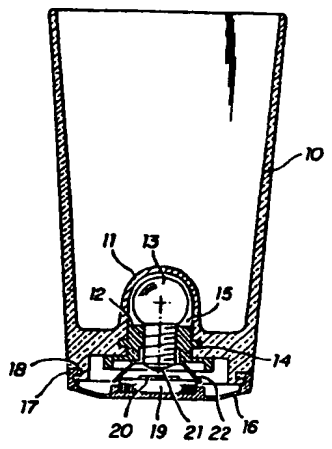
(72) Inventeur(s):
Nahum, Sylvain, Genève

(74) Mandataire:
Georges R. Charbonnier, Genève

(54) Récipient.

(57) Le récipient, en l'occurence un verre, est constitué par un corps transparent (10) et par une source de lumière comprenant une ampoule (13) logée dans le fond du corps (10) et alimentée par une pile (19) par l'intermédiaire d'un interrupteur (20, 21).

Cet interrupteur (20, 21) est fermé automatiquement lorsque le verre contient une certaine quantité de liquide.



REVENDICATIONS

1. Récipient transparent ou translucide, caractérisé par le fait qu'il comporte, incorporé à sa base, une source de lumière (13) agencée pour émettre des rayons dans l'espace destiné à recevoir son contenu et des moyens pour commander le fonctionnement de ladite source (13), le tout de manière que le récipient étant rempli, d'un liquide ou autre, il devienne, lorsque ladite source émet de la lumière, une source de lumière secondaire.

2. Récipient selon la revendication 1, caractérisé par le fait que lesdits moyens comprennent un interrupteur manuel.

3. Récipient selon la revendication 1, caractérisé par le fait que lesdits moyens comprennent un interrupteur automatique.

4. Récipient selon la revendication 3, caractérisé par le fait que ledit interrupteur (20, 21) est fermé automatiquement lorsque le récipient contient une certaine quantité de liquide.

5. Récipient selon la revendication 1, caractérisé par le fait que le circuit d'alimentation de la source (13) comprend un dispositif permettant de faire clignoter cette dernière.

6. Récipient selon la revendication 1, caractérisé par le fait qu'une lentille est interposée sur le chemin des rayons émis par la source (13).

7. Récipient selon la revendication 1, caractérisé par le fait que ladite source (13) est une ampoule logée dans le fond du récipient, dans un espace fermé de façon étanche par une pièce (16) amovible.

8. Récipient selon la revendication 1, caractérisé par le fait qu'il constitue un verre, une bouteille, un pichet ou une channe.

9. Récipient selon les revendications 1, 4, 7 et 8, caractérisé par le fait que ladite pièce (16) est élastiquement déformable de manière à actionner ledit interrupteur lorsqu'elle est sollicitée mécaniquement.

La présente invention a pour objet un récipient transparent ou translucide, par exemple une bouteille, un verre, un flacon, un pichet, une channe, dont le contenu peut être rendu lumineux de manière à constituer un dispositif d'éclairage ou à créer un effet de couleur et une ambiance intime chez soi ou dans des établissements publics tels que bars, night-clubs, restaurants, etc.

A cet effet, le récipient selon l'invention est caractérisé par le fait qu'il comporte, incorporée à sa base, une source de lumière agencée pour émettre des rayons lumineux dans l'espace destiné à recevoir son contenu et des moyens pour commander le fonctionnement de ladite source, le tout de manière que le récipient étant rempli d'un liquide ou autre, il devienne, lorsque ladite source fonctionne, une source de lumière secondaire dont la couleur sera déterminée par la nature de son contenu.

Le dessin ci-annexé représente, schématiquement et à titre d'exemple, une forme d'exécution de l'objet de l'invention, en l'occurrence un verre.

La figure 1 en est une vue en coupe verticale, le verre étant vide;

la figure 2 une vue analogue à la figure 1, le verre étant rempli d'un liquide transparent.

Le verre représenté est constitué par un corps 10, en verre blanc, transparent, dont la base présente, en son centre, une saillie intérieure 11, en forme de coupole occupant le fond de l'espace destiné à contenir le liquide.

Une douille 12, en matériau isolant, dans laquelle est vissée une petite ampoule électrique 13, est engagée amoviblement et fixée au moyen d'un système à baïonnette 14, dans la chambre 15 limitée intérieurement par la coupole 11.

La base du verre est constituée par une pièce 16, en matière plastique, comportant une partie annulaire 16' d'épaisseur relativement mince de manière à présenter une certaine souplesse. Cette pièce 16 est fixée amoviblement au corps 10 par un rebord 17 accroché élastiquement et de façon étanche dans une gorge circulaire 18.

Une pile 19, de forme ronde et plate, destinée à alimenter l'ampoule 13, est encastrée amoviblement dans un logement de forme correspondante ménagé dans la face supérieure de la pièce 16, en son centre.

Le pôle 20 de la pile 19 et l'extrémité 21 du culot de l'ampoule 13 constituent les pièces de contact d'un interrupteur qui est normalement ouvert lorsque le verre, posé sur sa base, est vide (figure 1).

En revanche, lorsque le verre est rempli, la surcharge créée par son contenu a pour effet de provoquer une déformation de la partie souple 16' et de fermer l'interrupteur dont les pièces 20 et 21 entrent en contact, ce qui a pour conséquence d'allumer l'ampoule 13 (figure 2).

En sens inverse, lorsque le niveau du liquide descend au-dessous d'une certaine valeur, la pièce 16 reprend sa forme initiale, l'interrupteur s'ouvre et l'ampoule s'éteint.

Durant le temps pendant lequel l'ampoule est allumée, le contenu du verre est traversé par les rayons lumineux et il devient à son tour une source de lumière dont la coloration dépendra naturellement de la nature du contenu.

Dans la forme d'exécution décrite ci-dessus, l'interrupteur commandant le circuit d'alimentation de l'ampoule 13 est actionné automatiquement en fonction de la présence ou de l'absence de liquide dans le corps 10. Dans une variante, on pourrait remplacer cet interrupteur automatique par un interrupteur manuel incorporé au fond du verre et qui serait actionné par exemple en exerçant sur le corps 10 une pression vers le bas. Dans une autre variante, on pourrait prévoir d'intégrer au circuit électrique un petit oscillateur de manière qu'au lieu de couper l'alimentation de l'ampoule 13 lorsque le verre est vide, cette dernière clignote. L'absence de lumière ou le clignotement de l'ampoule étant naturellement susceptible de constituer un signal pour aviser le personnel d'un établissement public qu'il y a lieu d'intervenir auprès d'un client pour remplir son verre ou proposer une nouvelle commande.

En ce qui concerne la coupole 11, on pourra lui donner d'autres formes que celle représentée au dessin, notamment la forme d'une lentille, par exemple d'une lentille déterminée de manière que tous les rayons émis par l'ampoule 13 subissent une réflexion totale sur la paroi intérieure du corps 10.

662 931
1 feuille

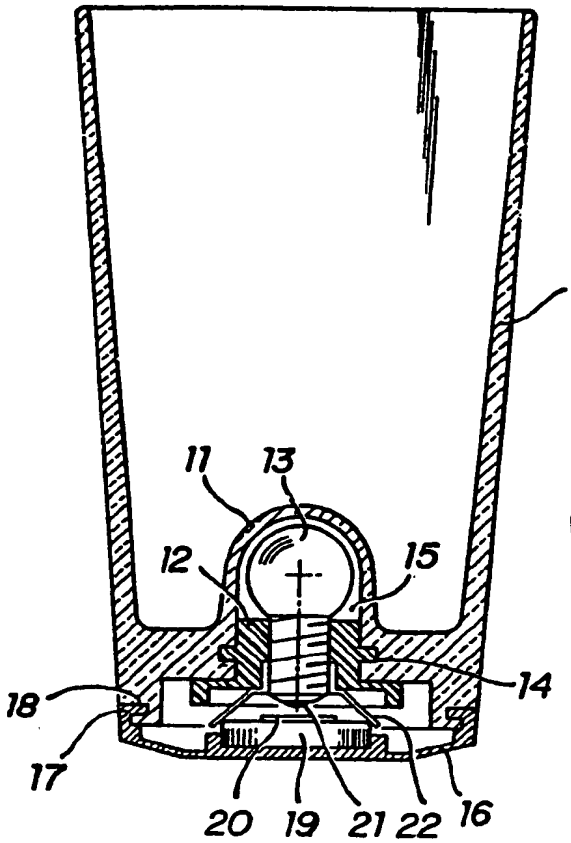


FIG. 1

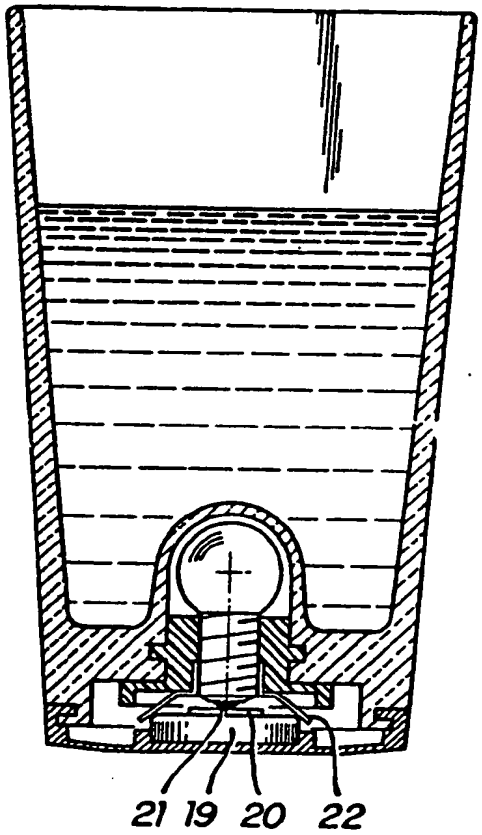


FIG. 2

(19) **SWISS CONFEDERATION**
Federal Intellectual Property Office

(11) CH 662 931 A5

(51) Int. Cl.: A 47G 19/22
F 21L 11/00

Patent issued in Switzerland and Liechtenstein
Patent Treaty of 22 December 1978, between Switzerland and Liechtenstein

(12) **PATENT SECTION** A5

(21) Application number: 303/85

(22) Date of filing: 24.01.1985

(24) Patent issued: 13.11.1987

(45) Patent section published: 13.11.1987

(73) Title-holder(s):
HNSA Fribourg

(72) Inventor(s):
Nahum, Sylvain, Genève

(74) Agent:
Georges R Charbonnier, Genève

(54) **Container.**

(57) The container, in the form of a glass, is made up of a transparent body (10) with a source of light provided by a bulb located in the base of the body (10) and powered by a battery (19) by means of a switch (20, 21).

This switch (20,21) switches off automatically when the glass contains a certain amount of liquid.

CLAIMS

1. Transparent or translucent container, which has a source of light (13) in its base made to emit rays into the space designed to receive its contents and a means of instructing how the said light source (13) functions, all so that when the container is full, with liquid or something else, it becomes, when the said source emits light, a secondary light source.

2. Container according to claim 1, whereby said means includes a manual switch.

3. Container according to claim 1, whereby said means includes an automatic switch.

4. Container according to claim 3, whereby said switch (20, 21) switches off automatically when the container contains a certain amount of liquid.

5. Container according to claim 1, whereby the feed system of the light source (13) contains a device that allows the latter to flash.

6. Container according to claim 1, whereby a lens is interposed in the path of the rays emitted by the light source (13).

7. Container according to claim 1, whereby the said light source (13) is a bulb located in the base of the container, in a closed, waterproof space made up of a detachable component (16).

8. Container according to claim 1, which consists of a glass, a bottle, a jug or a tankard.

9. Container according to claims 1, 4, 7 & 8 whereby the said component (16) is able to spring into shape such that it turns on the switch when mechanically prompted.

This invention consists of a transparent or translucent object, for example, a bottle, a glass, a flask, a jug, a tankard in which the contents can be illuminated by means of a lighting device or to create a coloured effect and an intimate atmosphere in your home or in public establishments such as bars, night-clubs, restaurants, etc.

To this end, the container according to the invention incorporates, in the base, a source of light arranged in such a way as to emit luminous rays in the space designed to receive its contents and a means of instructing the said light source to function, all so that the container being full with liquid or something else, it becomes, when the said light source is working, a secondary source of light where the colour is determined by the nature of the contents.

The attached schematic drawing, as an example, shows a way of carrying out the invention, in this case, using a glass.

Figure 1 is a vertical section, the glass being empty. Figure 2 is a similar view to Figure 1, with the glass full of a transparent liquid.

The glass shown consists of a body 10, in white, transparent glass from which a protrusion projects from the centre of its base, in the shape of a dome, and occupying the lower part of the space designed to contain the liquid.

A socket, made of insulating materials, into which a small electric bulb 13 is screwed, is inserted loosely and held in place by means of a bayonet system 14, in the interior area 15 limited by the dome 11.

The base of the glass consists of a component 16, made of plastic, containing an annular section 16' relatively slim so that it has an amount of flexibility. This component 16 is held in place, whilst being detachable from the body 10, by a lip 17 loosely hooked over it and waterproof in a circular groove 18.

A battery 19, round and flat in shape, designed to power the bulb 13,is loosely fitted into a housing of the appropriate shape arranged on the upper side of the component 16, in its centre.

The battery's 19 pole 20 and the end 21 of the bulb's 13 base make up the contacts of a switch which is normally open when the glass, positioned on its base, is empty (Figure 1).

On the other hand, when the glass is full, the surcharge created by its contents has the effect of initiating a distortion of the flexible part 16' and turning off the switch of which parts 20 and 21 enter in contact, which results in the bulb 13 being lit up (Figure 2).

In the opposite direction, when the level of liquid goes below a certain point, the part 16 springs back to its original shape, the switch turns on and the bulb goes out.

When the bulb is alight, luminous rays pass through the contents of the glass and it becomes, in turn, a source of light of which the colour will naturally depend on the nature of the contents.

In the method of operation as described above, the switch controlling the feed supply to the bulb 13 acts automatically depending upon whether there is liquid or not in the body 10. When using a variation of this method, this automatic switch could be replaced by a manual switch incorporated in the base of the glass and which could be set into action, for example by exerting pressure on the bottom of the body 10. In another option, a small oscillator could be integrated in the electric circuit so that instead of cutting the supply to the bulb 13 when the glass is empty, the bulb flashes. The absence of light or the flashing of the bulb obviously acts as a signal to warn the staff of the public establishment that there is an opportunity to approach a client to fill their glass or suggest they order another.

With respect to the dome 11, this could be shaped differently to that shown in the design, notably in the shape of a lens, for example, a lens such that all the rays emitted from the bulb 13 are totally reflected around the inner walls of the body 10.

The present invention relates to a container for liquids, such as a drinking glass, according to the general concept in Claim 1, an illumination device according to the general concept in Claim 18, and a multi-sided luminaire according to the general concept in Claim 20.

In dark or dimly lit environments an object made entirely or predominantly of transparent material, such as a drinking glass, can be difficult or even impossible to see, and the problem can thus arise that the glass may be knocked over.

The aim of the invention is to provide a container for liquid, an illumination device for the container and a multi-sided object which will allow the transparent container to be seen and grasped securely.

The invention achieves the above aim by means of a container for liquids according to Claim 1, an illumination device according to Claim 18 and an object according to Claim 20. Further developments are the subject of the dependent claims.

A basic idea of the invention is to combine a container for liquids with an illumination device in such as way that light can shine through the liquid or beverage in the container. The liquid scatters the light emanating from the illumination device, so that even when there is no ambient light, i.e. in darkness, the container can be safely identified and grasped.

When suitably designed and fitted, the illumination device is advantageous even when the container is empty, since the sides or sections of the drinking glass can be illuminated by the light from the illumination device and can create diffusion effects.

In this way the danger is reduced of accidentally knocking over the glass and of injury caused as the container or drinking glass breaks. In addition, the illumination device can create decorative lighting effects.

In general, it is advantageous to fit an illumination device in an object made at least partially of transparent material, particularly when this is done in a recess of the object.

A suitably designed, liquid-proof device can be inserted into a drinking glass together with the beverage itself, in order to provide illumination. The device should be the same shape and size as an ordinary ice cube.

The present invention is described in detail below, together with drawings of preferred embodiments. These show:

Fig. 1 a cross-section of a proposed container for liquids in the shape of a drinking glass in accordance with a first embodiment;

Fig. 2 a cross-section of a proposed container for liquids in the shape of a drinking glass in accordance with a second embodiment;

Fig. 3 a cross-section of a proposed container for liquids in the shape of a drinking glass in accordance with a third embodiment;

Fig. 4 a cross-section of a proposed container for liquids in the shape of a drinking glass in accordance with a fourth embodiment.

Fig. 1 shows a cross-section of a proposed drinking glass 1 with a related illumination device 2. The illumination device 2 emits light, a large proportion of which shines through and illuminates a beverage 3 contained in the glass, such as mineral water, fruit juice, beer, champagne and similar beverages. The beverage 3 causes the beams of light 4, shown as broken lines, to diffuse; this effect will of course depend on the optical characteristics of the beverage 3. The diffusion makes the beverage 3 and the drinking glass 1 easier to see, and also creates decorative light effects.

The drinking glass 1 has a bottom 5 and a side wall 6, which delineate and define an area, open at the top, holding the beverage 3. Additionally, the drinking glass includes a base or foot section 8, which increases the stability of the drinking glass 1.

The drinking glass 1 may, of course, be of a different shape. The second embodiment as in Fig. 2, for example, shows the drinking glass 1 in the shape of a champagne glass. The drinking glass 1 could also incorporate a handle (not shown) and/or could have a uniform diameter over its whole height.

In accordance with the present invention it is important that the term "drinking glass" should be understood in a very broad sense. The drinking glass 1 should preferably be made at least partially or particularly chiefly of glass. However, the drinking glass 1 can also be made completely or partially of a different at least partially transparent material such as plastic or a similar material. Essential to the present invention is that the light beams 4 emitted by the activated illumination device 2 are able at least partially to be transmitted to the beverage 3, and that the light diffused by the beverage 3 is at least partially visible externally. This requires the drinking glass 1 to have a certain degree of transparency. However, it is not essential that the drinking glass 1 be completely transparent or translucent. If required, the drinking glass 1 can be made of coloured glass or similar material.

In the embodiments described in detail in Figs. 1 to 4 below, the illumination device 2 is situated in the area of the bottom 5 and/or the base 8, so that when the drinking glass 1 is in an upright position – i.e. as when being used – the emitted light is transmitted upwards from below into the receptacle area 7 for the beverage 3 and travels through the beverage 3. However, the light can be emitted into the receptacle area 7 from a different direction, as described in detail at the end of the description. In addition, the light emitted from the illumination device 2 can also travel through the sides of the drinking glass 1,

for example through the side wall 6, the bottom 5 and the base 8, creating illumination effects, albeit on a smaller scale.

In the first embodiment according to Fig. 1 the drinking glass 1 has a recess 9 near the bottom 5 or the base 8 to contain the illumination device 2. The recess 9 is shown open at the bottom, but it could also open to the side if required.

The illumination device is shown cast integrally into the recess 9; the casting compound 10 is shown as the hatched area. The casting compound 10 should preferably be optically clear, using for example a two-component plastic. The illumination device 2 is permanently bonded to the drinking glass 1 or its recess 9. The casting compound 10 should preferably enclose the illumination device 2, or at least sensitive parts thereof, in a watertight manner, so that any liquid, such as water used to clean the drinking glass 1, will not adversely affect the illumination device 2.

In addition or as an alternative to the casting compound 10, the recess 9 can be sealed by means of a cover (not shown), which depending on requirements can form an essentially watertight seal for the recess 9 and the illumination device 2.

The first embodiment, therefore, shows particularly a so-called disposable version which is suitable for use particularly with cheaper designs of the drinking glass 1.

In the second embodiment according to Fig. 2, the drinking glass 1 has a tapered section or stem 11. The receptacle area 7 ends above the stem 11, and there is thus some distance between the bottom 5 and the base 8. In this case the bulb 12 of the illumination device should preferably be located above the stem in the area of the bottom 5 or the receptacle area 7. In particular the bulb 12 is seated in a suitable recess 13 located in the area. However, depending on the design, the bulb 12 can also be located directly inside the receptacle area 7, for example flat on the bottom 5.

Electrical connecting wires 14 run from the bulb 12 through the stem 11 to the recess 9 at the base, in which the other components of the illumination device 2, particularly according to the first embodiment, are located. The stem 11 can be hollow to allow the connecting wires 1 to run through it, Alternatively, the connecting wires 14 can be cast in the stem 11, either during the manufacture of the drinking glass 1 or afterwards.

The connecting wires 14 connect the bulb 12 to a power source 15 in the illumination device 2. The power source consists of a rechargeable or non-rechargeable battery.

The battery which forms the power source may for example be removable. For this purpose the illumination device 2 may have a suitable enclosure, open or capable of being opened at the bottom. For example, this enclosure

can be closed by means of a cover (not shown). The battery can then be removed and re-charged or replaced.

Alternatively, the battery particularly together with the entire illumination device 2 can be bonded to the drinking glass 1, particularly bonded into the recess 9 or similar. In this case – except in the case of a disposable version according to the first embodiment - when a re-chargeable battery is being used it should preferably be possible to re-charge the battery, for example by means of electrical contacts (not shown), in particular exposed on the base or in the form of a receptacle. Depending on the design, re-charging can also take place inductively, i.e. without a direct galvanic connection.

When using a re-chargeable battery the illumination device 2 should preferably be so constructed that the bulb 12 is automatically switched on when the drinking glass 1 or the illuminating device 2 is disconnected from the charger.

Alternatively or in addition, the illuminating device 2 can contain a solar cell (not shown) or similar to provide power. This may particularly be combined with a re-chargeable battery. An additional external energy source is then not normally necessary, which means that the entire illuminating device 2 can be encased, as shown in the first embodiment.

In the third and fourth embodiments of the drinking glass 1, shown in Figs. 3 and 4, the illumination device 2 is designed as an assembly 16, which preferably contains all the components of the illumination device 2. Particularly here at least all moisture-sensitive components of the illumination device 2 are at least essentially contained in the assembly 16 and protected against moisture.

Preferably the assembly 16 is shaped to the base 8 of the drinking glass 1, so that the assembly 16 can be fitted directly under the base 8. The assembly 16, the illumination device 2 and the drinking glass 1 are then shaped in such a way that the bulb 12 of the illumination device 2 can emit light from below through the base 8 or bottom 5 of the drinking glass 1 at least to a large extent into the receptacle area 7 of the drinking glass 1. Particularly the bulb 12, which points towards the base 8, is located on the upper surface of the assembly 16. Alternatively, where the upper surface 17 or its wall covers the bulb 12, the upper surface 17, which points towards the base 8, and its wall should be designed to be sufficiently transparent at least in the area of the bulb 12.

In the third embodiment in Fig, 3 the assembly 16 is integrally, permanently connected to the drinking glass 1 or its base 8. Particularly the assembly 16 is bonded to the underside of the base 8. If the drinking glass 1 has an arched section 18 in the area of the underside of the base 8, if required a substance 19 can be located in the arched section 18 and/or in another cavity between the base 8 and the assembly 16 or on its upper surface 17, in order for example to colour the light beams 4 and/or to reduce refraction or diffusion in interface areas.

However, the assembly 16 can also be fitted to the drinking glass 1 so as to be detachable. The fourth embodiment according to Fig. 4 shows such an example. Here a bottom edge of the drinking glass 1 or its base 8 is at least partially overlapped by holding elements 21 of the assembly 16, forming a detachable, form-locking holding device between the assembly 16 and the drinking glass 1. Particularly the holding elements 21 are formed by an elastic, mouldable edge of the assembly 16, which overlaps either the whole or part of the edge 20 of the base 8.

Of course, the holding elements 21 can be of a different suitable shape, particularly independent of the shape of the drinking glass 1 which is to be connected to the assembly 16. In particular it is sufficient if the holding elements 21 form a form-fitting rather than a form-locking connection to the drinking glass 1.

Particularly in the third and fourth embodiments an at least largely transparent plastic is used to create the assembly 16, in which the illumination device 2 is embedded, where at least all the moisture-sensitive components of the illumination device 2 are preferably embedded or cast and adequately sealed. The assembly 16 can however also be made of metal and/or only partially from plastic.

Instead of the assembly 16 being located on the underside, it can of course be fitted elsewhere, particularly on the side. For example, the assembly 16 can be manufactured in the shape of a ring or cuff and, depending on its shape can encircle the stem 11 or side 6 of the drinking glass 1, particularly being clamped to it. In this case preferably several bulbs 12 are arranged around the circumference of the assembly 16 and emit light inwards towards the receptacle area 7.

If the assembly 16 is in the form of a ring or cuff, for ease of attachment to the drinking glass 1 the assembly 16 can be semi-circular, open or slit, and/or at least to a certain extent be malleable.

According to a further alternative the assembly 16 can be fitted to a top edge of the drinking glass 1 – for example, by being suspended – in which case the emitted light will preferably chiefly travel downwards into the receptacle area 7 and thence into the beverage 3.

Alternatively the assembly 16 can be designed as a coaster for the drinking glass 1, and is not attached to the drinking glass 1. In this case the assembly 16, particularly its essentially flat surface extension, may be of a different shape than the base 8 of the drinking glass 1, particularly projecting at the side.

According to a further alternative, the assembly 16 forms particularly an object with multiple surfaces, which if of an appropriate size can be inserted directly into the receptacle area 7 of the drinking glass 1, in particular in the shape of an ice cube, in which case the assembly 16 or the illumination device 2

contained in it emits light into the beverage 3 surrounding the assembly 16. In this case, the assembly 16 is made of a suitable, in particular sufficiently transparent material and in particular of a food-safe or food-compatible material. Additionally, in this case the illumination device 2 and its components are contained in an optimally water-proof manner in the assembly 1, in particular the illumination device 2 is completely cast in the assembly 16.

In Figs. 1, 3 and 4, the illumination device 2 is shown as having a reflector 22 connected to the bulb 12. Depending on the desired lighting effects, this or another light supply can be employed; this depends particularly on the type of bulb 12 used. For example, either instead of or in addition to the reflector 22 a lens, for example a dispersion or focussing lens, or a device to diffuse and scatter the light, can be used.

The bulb 12 should preferably be electrically operated, as indicated in the four embodiments. Accordingly, in particular at least one light bulb, one krypton bulb, one light diode and/or a laser can be employed as the bulb 12. These alternatives can also be combined, for example a laser can be combined with a dispersion lens.

Alternatively, a bulb 12 which operates chemically can be used. In this case an electrical supply is not necessary. This is particularly suitable for use in disposable applications. A disadvantage is the frequently poor-quality diffusion, as once a bulb which operates chemically has been turned on, it is normally not possible to turn it off.

It is advantageous to use an electrically powered bulb 12. In this case, the illumination device 2 should preferably contain an electrical control mechanism, particularly to turn the bulb 12 on and off and/or dim it.

In the first version the control mechanism consists of a switch 23 shown in Figs. 1 to 4, which in particular can be manually operated externally. For example, the switch 23 is used to turn the bulb 12 on and off.

Additionally or alternatively the control mechanism can include a time switch (not shown), which for example turns on the bulb 12 automatically after a specified time, or turns the bulb 12 on at a specified or programmable time – for example, on 31 December 1999 at 23.50 or midnight – and/or turns the bulb 12 on and off – for example, making it flash - at certain intervals.

Additionally or alternatively the control mechanism may include a proximity switch which for example recognises when the drinking glass 1 contains a liquid or beverage 3 and/or if a person is in the proximity of the drinking glass 1 and in particular touches it with his hand, when the bulb 12 is turned on or off.

Additionally or alternatively the control mechanism may include a dimmer switch which for example turns on the bulb 12 when the ambient light diminishes.

Additionally or alternatively the control mechanism may include an acoustic sensor which for example turns the bulb 12 on when a certain noise level is exceeded and turns it off when the noise falls below the level.

Additionally or alternatively the control mechanism may include a vibration sensor which for example turns the bulb 12 on when the drinking glass 1 is moved or shaken.

Additionally or alternatively the control mechanism may include a positional sensor which for example turns the bulb 12 on when the drinking glass 1 is vertical and turns it off when the drinking glass 1 is turned over with the receptacle area 7 pointing downwards.

Additionally or alternatively the control mechanism may include a contact sensor which for example turns the bulb 12 on or off when the corresponding sensor surface is touched.

Additionally or alternatively the control mechanism may include a movement sensor which for example turns on the bulb 12 when it recognises certain movements in the proximity of the drinking glass1.

Additionally or alternatively the control mechanism may include a pressure sensor which for example turns on the bulb 12 when a certain pressure is exceeded as a result of a beverage 3 in the receptacle area 7.

Additionally or alternatively the control mechanism may include a temperature sensor which for example measures the temperature of the beverage 3 and, depending on the temperature, turns the bulb 12 on or off.

Additionally or alternatively the control mechanism may include a moisture sensor which recognises whether a liquid, i.e. a beverage 3, has been poured into the drinking glass 1, and turns the bulb 12 on or off.

The description above describes the present invention in terms of liquid containers in the form of drinking glasses 1. However, the proposed liquid container may also for example be in the shape of a bottle. In particular it may be in the shape of a small bottle for perfume, in which case the illumination device incorporated into the bottle would be used to at least partially illuminate or shine light through the perfume.

The descriptions of the drinking glasses 1 and the illumination device 2 and the suggested constructive solutions given earlier essentially apply also to the variations described above. Additionally, in particular a bottle or perfume bottle can also be so constructed that when the bottle is opened the illumination device 2 and its bulb 12 are automatically switched on.

DESCRIPTION

"DEVICE FOR COOLING DRINKS, PORTABLE ICE BOXES AND THE LIKE"

Technical Section of the Invention

This invention relates to a device for cooling drinks, portable ice boxes and the like, of the type which consist of at least one hermetically sealed container, partially filled with a liquid refrigerant and designed to be pre-refrigerated and then inserted into the drink or container to be cooled.

This type of container is also used to cool portable ice-boxes and in other similar applications.

Previous technology

The use of pieces of ice or ice-cubes to cool drinks in glasses or other containers has existed for a long time. However, this practice, although widespread, is hardly appropriate in certain cases because of the fact that when the ice-cubes melt, the drinks become diluted.

To avoid the inconvenience of diluted drinks caused by ice-cubes, small containers made out of plastic material, glass or crystal have been used, normally in spherical or prismatic form, containing a liquid refrigerant and which, pre-cooled in a refrigerator or cooler, can then be inserted in the drink which it is required to be cooled. Amongst the various methods of carrying out this solution, it is possible to quote that of model no. 135.829, already obsolete.

Although this solution eliminates the problem of diluted water in drinks, at the same time as offering the advantage of not having to completely cool the refrigerant before use, as opposed to what happens with ice-cubes, said small containers are not extensively used because they raise several inconvenient technicalities, amongst which the most important is perhaps the need to increase the effectiveness and speed of absorption of calorific energy of the drinks, as the materials used up until now for fabricating said small containers, such as glass and plastic materials, have very low coefficients of calorific conductivity and are for this reason, very bad conductors of heat.

Consequently, said known containers absorb the calorific energy of the drinks very slowly, to transmit it to the internal liquid refrigerant, and in such a

way they have sufficient time to also absorb, a part of the calorific energy of the atmosphere, losing a major part of their capacity to cool the drinks, which is particularly noticeable in the summer.

Another important inconvenience of known containers made of plastic materials or glass, is that the said containers float to the surface of the drinks, resulting in embarrassment at the moment of drinking and at the same time losing part of their capacity to cool due to their contact with the air and the lips of the drinker. Among others, the solutions described in models nos. 8702632 and 9102632 are aimed at preventing the said conventional refrigerant containers from floating.

On the other hand, another technical problem of conventional containers is the mechanical fragility of the materials used in their fabrication. In fact, however good the glass or the plastic materials, they are easily broken whilst being manipulated, thus contaminating the drinks by the presence, often imperceptible, of dust or pieces of glass or liquid refrigerant, etc., which can cause very serious, even lethal, intestinal infections. Furthermore, to the fragility of crystal and glass, can be added the fact that with this type of container made of plastic material, which consist of very thin strips, very frequently distortions occur produced by the crushing the side inwards, which very rapidly starts to rupture the said strip.

In addition, in the case of refrigerant containers made from plastic materials, the seals have plasticized additives and in particular, butyl phthalate, which is a disagreeably smelling material with a very bad taste, a major part of which is transmitted to the drinks.

Also, the containers in question must be cleaned frequently, effectively and with ease, because of hygiene requirements brought about by their being used by different people. However, when said containers are made of plastic materials, said cleaning is very difficult to carry out at the base, as the surface of said materials is porous and allows dirt and micro-organisms which are dangerous to the health to adhere, at the same time as encouraging the incrustation of particles of odorous drinks, of which the odour persists for quite a long time and adulterates other drinks' own flavours, throughout later use of the same containers.

Description of the invention

The cooling device, subject of this invention, not only eliminates all the inconveniences mentioned above, but also offers refrigerant containers which offer multiple additional advantages, which will be seen later.

Essentially, the device detailed in the invention is characterised by the fact that it is preferably of a polyhedral or spherical configuration, consists of a material which possesses excellent calorific conductivity and has an exact weight notably greater than that of water, such as a metal resistant to oxidation through contact with drinks and the atmosphere, and has an entrance opening for liquid refrigerant and a hermetic stopper to close said opening, the exact weight of the entire container and the liquid refrigerant being substantially greater than or equal to that of water, the whole being adapted in such a way that at the moment of inserting the container in a drink, the container descends to the bottom of the glass or whatever contains the drink, or even remains submerged in the middle of the drink, without touching the base of the glass or container.

According to another characteristic of the intention, the space inside the container free of refrigerant liquid is occupied by hydrogen or with a noble gas such as helium.

According to another characteristic of the invention, the proportion between the volume of gas and the liquid refrigerant is such that the device floats between two waters in the middle of the drink.

In order to make the containers according to this invention, metals can be used or even metal alloys. The containers made in this way cool the drinks into which they are inserted in a much more speedy and efficient way, at the same time they themselves cooling down much more quickly, which permits a great deal of time and energy to be saved. Once in contact with a solid material, liquid or gaseous, the containers cool it down to 3 or 4 degrees centigrade below zero, in a closed environment, and down to nearly zero degrees, in an open environment (for example, a drink in a glass).

Said metallic containers according to this invention offer a very adequate mechanical resistance against knocks and bumps and they can

even sustain partial distortions without breaking, as the metals are hard, whilst being malleable and long-lasting.

Taking into account the needs of chemical, mechanical and hygienic resistance, the materials most often suggested to make the containers according to the invention are aluminium, susceptible to being embellished by coloration as a result of anodic oxidation, and stainless steel, as well as their alloys, as these are relatively economic materials. For luxury articles, silver, gold, platinum, palladium, rhodium or their alloys can be used.

Other additional advantages of the containers made according to the invention are the fact that they can easily be engraved with the owner's name or seal or even chased artistically just as an actual piece of jewellery; there is also the possibility of recovering them in a fine layer of precious metal, such as silver, gold, platinum, rhodium, etc. to give them even more brilliance.

Also, when precious metals are used in the fabrication of the proposed containers, it is possible to benefit more from the oligo-chemical and bacteriological actions to which the said metals give rise.

For all of these reasons, the device which is the subject of the invention is ideal for use in particular in countries where water is suspected of being contaminated by pathogenic agents (cholera, amoeba, etc.).

On the other hand, it should be stressed that the device which is the subject of this invention maintains its calorific or cooling capacity in a thermally insulated container, such as for example of the thermo variety, for a minimum of 24 hours.

Brief description of the drawings

In the drawings attached, as a non-restrictive example. a method of making the device which is the subject of the invention is illustrated.

Figure 1 shows a section view according to a diametric plan, of a spherical container according to the invention; and

Figure 2 shows a perspective view of a glass that contains a drink in the middle of which three containers according to the invention have been inserted.

In Figure 1 can be seen, as has already been mentioned, a diametric section of one method of making the device according to the invention, in

which the container (1) that has a spherical configuration and is formed by two united halves joined together by solder or gluing, particularly with epoxy resins, or by all other types of joining.

The containers (1) mentioned, preferably spherical in shape, can also be obtained without solder or collage, by means of dies of a special type, by electroplating, by pulvi-metallurgy or by any other suitable method. But they can also be obtained with a cylindrical or prismatic configuration, by means of impact extrusion, stamping, etc. and in such a configuration (not shown in the drawings), the opening (4) is one of the bases of the body and the stopper (5) is a metallic disc which is in position when hermetically closing the opening, by folding for example.

The liquid refrigerant (3) is hermetically sealed inside the container (1), and is likely to be inserted in the interior of the container (1) by a small opening (4), also sealed hermetically by means of a stopper (5), that, in the case shown is screwed on at the opening (4). The stopper (5) shown can be replaced by a spot of solder, by some epoxy resin or by any other means of blocking.

As can be seen in Figure 1, the container (1) is not totally full of liquid refrigerant (3) and it has one part (8) filled with gas, which is usually air. However, in order to increase the volume of liquid refrigerant (3) contained in the container (1), and to consequently increase the calorific capacity of the device, without the container (1) pressing permanently on the bottom of the glass or container (6) and so that it can float between two waters in the middle of the drink (7), the air can be advantageously replaced by hydrogen or by a noble gas such as helium.

In Figure 2 one can see a glass (6) which contains a drink (7), inside which a first spherical container (1) and a second twelve-sided container (1') which stays at the bottom of the glass (6), as well as a third container in the shape of an icosahedron (1") which floats between two waters in the middle of the drink (7).

The polyhedral containers (1' and 1"), have the advantage over the spherical container (1) in that if they are made with metals with a shiny external surface, they produce aesthetically attractive reflections inside the drink (7). Naturally, the containers (1) can consist of spheres on the surfaces

of which there are miniscule facets, such as for example can be seen on the surface of a golf ball, which will increase the number of reflections of a shiny metallic surface.

For portable ice-boxes and other similar practical applications, it will obviously be necessary to make containers of the type described much greater in size and of a configuration adapted to its needs, but preferably parallelepipedal.

Another very important advantage of the device which is the subject of this invention is the fact that it can be used in a reverse thermal cycle, that is to say, to reheat the drinks or containers, after having pre-heated the containers made according to the invention, preferably in a receptacle containing hot water.

After having adequately described the object of the invention, as well as the method of putting it into practice, one can see that various details of its characteristics can be changed as long as its fundamental principal is not changed, altered or modified.